BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CAL

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PATHFINDER CAES 1 LLC COMMENTS ON ORDER INSTITUTING RULEMAKING TO DEVELOP AN ELECTRICITY INTEGRATED RESOURCE PLANNING FRAMEWORK AND TO COORDINATE AND REFINE LONG-TERM PROCUREMENT PLANNING REQUIREMENTS

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Pursuant to Rules 1.9 and 1.10 of the California Public Utilities Commission's ("CPUC" or "Commission") Rules of Practice and Procedure, Pathfinder CAES I LLC ("Pathfinder") submits these comments on the February 19, 2016 *Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements* ("OIR").

Pathfinder's parent company is proposing to develop a 2,100 MW wind farm in southeastern Wyoming which will connect to California through the Zephyr Transmission line, proposed by Duke American Transmission Company ("DATC"). Pathfinder is also proposing to develop a 1,200 MW compressed air energy storage ("CAES") project located in Millard County, Utah. Initially, Pathfinder plans to construct, own, and operate a smaller 300 MW CAES project in the same location. This project is the first of several phases ("Phase I") and is designed to support grid-level integration of California renewable energy generation. The Phase I CAES project will be constructed at the eastern terminus of the Southern Transmission System ("STS") in Delta, Utah. Ultimately, the Pathfinder CAES development and Pathfinder wind could, among other benefits, serve as replacement resources for carbon-intensive resources such

as the Intermountain Power Project, a 1,900 MW coal plant serving primarily Utah and Southern California publically owned utilities ("POUs").

Pathfinder believes that the Commission's Integrated Resource Planning ("IRP") process should provide an opportunity to evaluate and develop procurement processes to facilitate development of bulk storage. Pathfinder also believes the IRP proceeding should support high-level coordination between the Commission and the California Energy Commission (CEC) as contemplated by the legislature in enacting SB 350.

I. The Commission's IRP Process Should Provide an Opportunity to Evaluate and Develop Procurement Processes to Facilitate Development of Bulk Storage.

Pathfinder supports the Commission's consideration of bulk storage in the preliminary scope of the IRP proceeding. The OIR states, "…there may be a need for the Commission to evaluate approaches to procurement of certain types of electricity resources that have very long lead times, such as pumped storage or long-line transmission to other states in the West."

Existing procurement targets (e.g., the existing storage mandate) have not provided California with the tools needed to access these long lead time resources. SB 350 removed some of those barriers by placing the State's Greenhouse Gas ("GHG") targets front and center in resource planning decisions. Indeed, the IRP should provide a much-needed opportunity to evaluate and develop procurement processes in order to facilitate development of bulk storage.

Like pumped hydro storage ("PHS"), CAES is a viable electricity resource with a long development lead time, and the Commission should include CAES as well as PHS in the proceeding scope.

Despite the promise for bulk storage to support implementation of California's 50% renewable portfolio standard ("RPS") and GHG reduction goals, California has not yet provided a sufficient and robust venue for procurement of bulk storage. The Long-Term Procurement

Planning Proceeding ("LTPP") (R.13-12-010) and the Energy Storage Proceeding (R.15-03-011) have not been deemed suitable venues for bulk storage procurement. As Eagle Crest Energy has noted, "Absent a change in the status quo, the extent to which Eagle Mountain and projects like it can be part of the solution in California is in doubt."[1]

At the November 20, 2015 CPUC, CEC and California ISO Bulk Storage Workshop ("Workshop"), multiple parties identified barriers to bulk storage procurement through the LTPP. One of the major barriers identified by parties including Eagle Crest Energy, California Energy Storage Alliance (CESA), EDF Renewable Energy, and Pathfinder is the incongruity of the LTPP planning horizon and the timing of bulk storage development. Bulk storage technologies have been shown by E3,[2] CAISO,[3] and NREL[4] to be important pieces of a 50% renewable portfolio. However, as CESA argues, the combination of the LTPP's 10-year planning horizon and maximum 20-year PPAs may cause energy storage projects, which can be longer-term solutions, to be overlooked.[5] Further, Eagle Crest Energy suggests that the ten-year LTPP horizon is too short to justify investment in bulk storage technologies.[6]

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[1] Eagle Crest Energy Company Comments: submitted in response to Joint CEC-CPUC November 20, 2015 Bulk Storage Workshop (http://docketpublic.energy.ca.gov/PublicDocuments/15-MISC-05/TN207086_20151218T142740_William_D_Kissinger_Comments_Comments_of_Eagle_Crest_Energy_Com.pdf)

[2] E3's Pathways study concluded that roughly 5,000 MW of long-duration energy storage would be needed at 50% renewables in 2030, without flexible hydrogen fuel production.

[3] CAISO's Bulk Storage Case Study found that bulk storage is beneficial in reducing curtailment, emissions, production costs, and renewable overbuild starting at a 40% RPS.

[4] The Low Carbon Grid Study 2030 concluded that additional bulk storage is important to minimizing curtailment and costs in a low carbon electric grid, especially when other methods of providing grid flexibility are limited.

[5] CESA's comments on the November 20, 2015 CPUC, CEC and CAISO Bulk Storage Workshop (http://docketpublic.energy.ca.gov/PublicDocuments/15-MISC-05/TN207082_20151218T114213_Donald_Liddell_Comments_121815_CESA%E2%80%99s_Comments_on_Bulk_Storage.pdf)

[6] Eagle Crest Energy's comments on the November 20, 2015 CPUC, CEC and CAISO Bulk Storage Workshop (http://docketpublic.energy.ca.gov/PublicDocuments/15-MISC-

As stated by PUC Staff at the Workshop, these long-lasting resources have significant upfront costs that, if expected to be recovered in the first contract term, will be less desirable than shorter-lived assets. The time horizon is also unsound when considering the approaching 2030 deadline for a 50% RPS. Creation of an appropriate venue for procurement of bulk storage is urgent because development of bulk storage projects may take up to 15 years.[7] Without an appropriate venue for procurement, these cost-effective bulk storage solutions will not be online by 2030. The IRP should provide a venue that corrects this procurement paradigm.

In the LTPP framework, bulk storage bids are reportedly unattractive to individual utilities because of their large capacity, substantial capital costs, and system-wide focus (as opposed to utility-specific benefits focus). As other parties have suggested, a multi-utility procurement mechanism could ameliorate this challenge. The IRP should provide a venue for the CPUC to facilitate multi-party contracting of bulk storage resources.

The Energy Storage Proceeding has also been an unavailing venue for bulk storage procurement. Phase 1 of the proceeding specifically excluded PHS over 50 MW and was silent on how other bulk storage resources, such as CAES, might qualify. While Phase 2 could increase the total storage target and expand eligibility to include bulk storage technologies greater than 50 MW, this pathway to bulk storage procurement is uncertain. Further, Pathfinder recognizes that the Energy Storage Proceeding may not be the ideal venue for bulk storage. As EDF Renewable Energy pointed out in their February 5 comments on the Track 2 Scoping

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05/TN207086_20151218T142740_William_D_Kissinger_Comments_Comments_of_Eagle_Crest_Energy_Com.pdf)

[7] Eagle Crest Energy's comments on the November 20, 2015 CPUC, CEC and CAISO Bulk Storage Workshop (http://docketpublic.energy.ca.gov/PublicDocuments/15-MISC-05/TN207086_20151218T142740_William_D_Kissinger_Comments_Comments_of_Eagle_Crest_Energy_Com.pdf)

Ruling, [8] the current framework requires procurement within the IOU service territories. However, bulk storage is typically sited based on specific hydrologic or geologic characteristics that do not conform to these boundaries. Further, in the current framework, procurement capacity is scaled annually at levels below that of Pathfinder's proposed CAES project and any known PHS project. Like the LTPP, the expected development lead time is too short for bulk storage, and a single utility procurement approach limits collaboration and multi-party procurement.

The IRP process offers a unique opportunity for the CPUC to develop new procurement mechanisms suitable for bulk storage. When state agencies considered the concept of Integrated Resource Planning at the Energy Principals Symposium in July 2015, principals and presenters expressed concerns regarding the current resource procurement silos and the mismatch between disparate procurement proceedings and the state's overarching GHG goals. Edward Randolph, Director of the Energy Division at the CPUC, noted that the CPUC has struggled to assess resources that provide multiple different value streams. Bulk storage is a resource which can act as generation, offset transmission development, and provide ancillary services and has indeed been difficult to value within existing resource valuation and procurement frameworks. Randolph further explained that with a GHG-focused perspective in an IRP process, parties and agencies could compare pumped-hydro storage to a gas peaker plant whereas today, this bulk storage resource has no natural home.

Thus the IRP process is intended to not only break down procurement silos and allow for optimized resource procurement but also to serve as a venue to value and consider resources, such as bulk storage, which do not fit elsewhere today. While further analysis is needed to

[8] http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M158/K117/158117017.PDF

evaluate bulk storage services and match these services to system needs, multiple studies have concluded that some level of bulk storage will undoubtedly be a part of an optimal portfolio as California approaches 2030. Pathfinder urges the Commission to include bulk storage procurement in the scope of the IRP proceeding.

Finally, it will be important for the Commission to examine more than one bulk storage technology, not just PHS. CAES is a viable, tested bulk storage technology with many potential system benefits. For example, Phase 1 of Pathfinder's CAES project would provide 48 hours of storage (14,400 MWh), generation ramping capability of 20% of rated output per minute, and compression ramping capability of 30% of rated output per minute. It can operate in both storage and generation modes simultaneously. This project would support grid inertia stability (frequency response) by providing transmission operators the benefit of four separate rotating machines. Phase 2 of Pathfinder's CAES project could provide up to 1,200 MW of capacity. The Commission must broaden consideration of and enable the procurement of bulk-storage including CAES, PHS, and any and all other viable bulk storage technologies.

II. The IRP Proceeding Should Support High-Level Coordination Between the Commission and the CPUC as Contemplated by the Legislature in Enacting SB 350.

The OIR raises as the following question: "Whether and how to coordinate IRP requirements for Commission-jurisdictional LSEs with the CEC's similar responsibility to oversee a similar IRP process for publicly-owned utilities." Pathfinder supports coordination.

SB 350 sets forth requirements for publicly-owned utilities ("POUs") and defines the role of the CEC in overseeing their planning processes. SB 350 also contemplates coordination by establishing similar requirements for CPUC-jurisdictional LSEs in Section 27 of the Act and for POUs in Section 35 of the Act, including meeting GHG targets, ensuring a 50% RPS by 2030,

minimizing ratepayer impact, and ensuring local reliability.[9] SB 350 further considers coordination to satisfy *statewide* GHG targets.[10] These and other related requirements in SB 350 indicate legislative desire for coordination.

The integrated resource planning promotes a holistic approach to resource procurement. Coordination among IRP processes could provide an important step toward multi-utility procurement opportunities that could further spur development of certain large-scale resources. Bulk storage resources, which provide substantial benefits to the whole grid, will be advanced by the possibility of a multi-party procurement processes made possible by coordination. Coordination will enable the development and acquisition of lowest-cost, highest-value resources for all California utilities. As one example, Pathfinder's CAES project would connect to LADWP's balancing area via the STS line. With a potential project size of 1,200 MW or larger, this resource could benefit neighboring California IOUs and POUs to the extent that there is successful coordination as contemplated in SB 350.

III. Conclusion

Pathfinder encourages the Commission to include procurement of bulk-storage resources in the IRP process and address the existing hurdles to bulk storage in the context of this proceeding. Pathfinder also believes the IRP framework provides a unique opportunity for high-level coordination in resource planning that focuses on the state-wide needs to achieve GHG emissions reductions.

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[9] Cal. Pub. Util. Code Secs. 454.52 and 9621.

[10] Cal. Pub. Util. Code Secs. 454.52(a)(1) and 9621(b)(1).

Pathfinder looks forward to continuing to work with the CPUC, the CEC and their staff as part of this new proceeding.

Dated: March 21, 2016 Respectfully submitted,

By: /s/

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VERIFICATION

I am the attorney for Pathfinder CAES 1, LLC ("Pathfinder"). Pathfinder is absent from the County of Sacramento, California, where I have my office, and I make this verification for Pathfinder for that reason. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the forgoing is true and correct.

Executed on March 21, 2016 at Sacramento, California.

/s/

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